

CLAIMS

What is claimed is:

1. An antenna comprising:
 - a patch element;
 - a ground plane coupled to the patch element;
 - a first strip line in the ground plane to propagate a first polarized signal in a first direction;
 - a second strip line in the ground plane to propagate a second polarized signal in a second direction; and
 - wherein the first strip line is activated separately from the second strip line.
2. The antenna of claim 1, wherein the ground plane includes an aperture.
3. The antenna of claim 2, wherein the aperture is cross-shaped.
4. The antenna of claim 1, wherein the first strip line and the second strip line are coupled directly to the patch.
5. The antenna of claim 4, wherein the first and second strip lines are coupled to an edge of the patch.
6. The antenna of claim 1, wherein the first direction is horizontal and the second direction is vertical.

7. The antenna of claim 1, wherein the patch element is between 0.5 and 12 inches wide, the ground plane is between 1 inch and 18 inches wide, the first and second strip lines are between 0.03125 inches and 1 inch wide, and wherein the patch element and the ground plane are separated by between 0.25 inches and 5 inches.
8. The antenna of claim 1, wherein the patch element is 4.25 inches wide, the ground plane is 6.5 inches wide, the first and second strip lines are 0.1875 inches wide, and wherein the patch element and the ground plane are separated by 0.5625 inches.
9. The antenna of claim 5, further comprising a first impedance matching flare coupled between the edge of the patch and the first strip lines to adjust characteristics of the antenna, and a second impedance matching flare coupled between the edge of the patch and the second strip line to adjust characteristics of the antenna.
10. The antenna of claim 9, wherein the flare is between 0.0625 and 2 inches wide, and wherein the flare is between 0.25 and 5 inches tall.
11. The antenna of claim 9, wherein the flare is 0.5 inches wide and wherein the flare is 0.4375 inches tall.
12. The antenna of claim 1, further comprising a dielectric material between the patch element and the ground plane.

13. The antenna of claim 1, wherein the second direction is sixty degrees or more from the first direction.
14. The antenna of claim 1, wherein the antenna is configured to read radio frequency identification (RFID) tags.
15. An interrogator comprising:
- a transmitter;
 - a receiver coupled to the transmitter;
 - a decoder coupled to the receiver to decode received signals; and
 - an antenna coupled to the receiver and the transmitter, the antenna comprises a patch element coupled to a ground plane, a first strip line in the ground plane to propagate a first polarized signal in a first direction, a second strip line in the ground plane to propagate a second polarized signal in a second direction, and wherein the first strip line is activated separately from the second strip line.
16. The interrogator of claim 15, further comprising a combiner coupled between the receiver and the transmitter.
17. The interrogator of claim 15, wherein the first direction is horizontal and the second direction is vertical.

18. The interrogator of claim 15, wherein the ground plane includes an aperture.
19. The interrogator of claim 18, wherein the aperture is cross-shaped.
20. The interrogator of claim 15, wherein the first and second strip lines are coupled to an edge of the patch element.
21. The interrogator of claim 15, further comprising a first impedance matching flare coupled between the first strip line and the edge of the patch element, and a second impedance matching flare coupled between the second strip line and the edge of the patch element.
22. A method comprising:
- alternately activating a first strip line on an antenna to propagate a first signal having a first polarization and activating a second strip line on an antenna to propagate a second signal having a second polarization;
 - searching for an identification tag using the first and second signals; and
 - identifying the identification tag.
23. The method of claim 22, wherein activating the first strip line generates a horizontally polarized signal, and wherein activating the second strip line generates a vertically polarized signal.

24. The method of claim 22, wherein the identification tag is a radio frequency identification (RFID) tag.
25. The method of claim 22, wherein the antenna is a patch antenna.
26. The method of claim 22, wherein the second polarization is oriented more than sixty degrees from the first polarization.
27. The method of claim 22, further comprising changing a frequency of the first and second signals.
28. The method of claim 27, wherein changing the frequency comprises changing the frequency according to a user-programmed switching profile.
29. The method of claim 27, wherein changing the frequency comprises changing the frequency according to an adaptive switching profile.